APPENDIX 1
CLEAN VERSION OF REWRITTEN, ADDED, AND/OR CANCELLED TEXT PURSUANT TO 37 C.F.R. §1.121 (b)

value of the free fatty acid material is preferably less than 10, 7.5, 5, 3, 1, or 0.5.

The attainment of the foregoing and related advantages and features of the invention should be more readily apparent to those skilled in the art, after review of the following more detailed description of the invention taken together with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram of a candle in accordance with the present invention.

Fig. 2 is a diagram of a triglyceride in accordance with the present invention.

Fig. 3 is a diagram of a free fatty acid in accordance with the present invention.

DETAILED DESCRIPTION

The present invention achieves low-soot, low-smoke candles by virtue in part of using triglyerides (TGs) and free fatty acids (FFAs) that have low Iodine Values (IVs). IV for purposes of the present invention is a measure of the unsaturation of fats and oils and is expressed in terms of the number of centigrams of iodine absorbed per gram of sample (% iodine absorbed). The preferred measurement protocol is Official Method Cd 1d-92 of the American Oil Chemists Society, though other protocols may be used. IVs are an indication of the degree of unsaturation within the triglycerides and/or free fatty acids, and the amount of unsaturated triglycerides and/or free fatty acids is proportional to the amount of undesired combustion products (i.e., soot and smoke, etc.). Thus, reducing the level of unsaturation reduces IV and also reduces the potential for soot and smoke production.

A candle made from TG alone will have a bright flame and burn relatively rapidly. A candle made from FFA alone will have a low flame and burn more slowly. By mixing these two products together, a candle can be achieved that has an appealing, steady flame and that burns relatively slowly.

In one embodiment, the mix of FFA to TG for a preferred candle burn is at least about 3%to about 35% by weight FFA, and most preferably is at least about 4% to about 22% by weight FFA. Most preferably, such FFA is plant source FFA. In another embodiment, the mix of FFA to TG for a preferred candle burn is at least about 40% by weight TG, and most preferably at least about 70% by weight TG. Again, most preferably, such TGs are plant source TGs.

Palm Stearine or related TG

Palm stearine (a hydrogenated TG) is preferred because palm stearine is currently a low-cost by-product of palm oil processing and therefore readily available and inexpensive. Furthermore, palm stearine and related plant source TGs are derived from a renewable, non-animal source. These qualities are highly sought after as our society moves towards sustainable resource practices. Also, plant source TGs and FFAs tend to have lower odors.

Candle 10 is preferably made as follows. Palm stearine is available commercially and is usually shipped as flakes. This flaked material can be provided having the lower and more desired IVs of the present invention. In one embodiment, a preferred IV of the TG component is less than 1.0 and more preferably approximately 0.5 or less. The FFA vegetable stearic acid is similarly commercially available, shipped as flakes and is provided having the lower and more desired IVs of the present invention. In one embodiment, a preferred IV for the FFA component is less than 1.0, and more preferably approximately 0.5 or less. These components are preferably melted at temperatures of approximately 180 degrees F and then mixed and poured into a mold about wick 12. The molten wax cools to form the candle body 11. Wick 12 is preferably a paper core cotton wick.

1. A candle comprised substantially of hydrogenated plant source triglycerides in combination with other components, said candle having an iodine value of less than 10, whereby when said candle is burned substantially no soot is produced.

2. The candle of claim 1, wherein said iodine value is less than 7.5.

3. The candle of claim 1, wherein said iodine value is less than 5.

4. The candle of claim 1, wherein said iodine value is less than 3.

5. The candle of claim 1, wherein said iodine value is less than 1.

6. The candle of claim 1, further comprising, in combination with said triglyceride, a free fatty acid.

7. The candle of claim 6, wherein said free fatty acid includes a plant source free fatty acid.

8. The candle of claim 6, wherein said plant source triglycerides and said free fatty acid have an iodine value of 5 or less.

~~9~~. The candle of claim 6, wherein said plant source triglycerides and said free fatty acid have an iodine value of 1 or less.

9 10. The candle of claim 6, wherein said candle includes from about 2% to about 35% by weight free fatty acid.

10 11. The candle of claim 6, wherein said candle includes from about 4% to about 22% by weight free fatty acid.

12. A candle comprised at least in part of plant source triglycerides and plant source free fatty acids, said candle having an iodine value of less than 10.

13. The candle of claim 12, wherein said candle includes at least about 40% by weight plant source triglyceride.

14. The candle of claim 12, wherein said candle includes at least about 70% by weight plant source triglyceride.

15. The candle of claim 12, wherein said candle includes at least about 4% by weight plant source free fatty acid.

16. The candle of claim 12, having an iodine value of less than 5.

17. The candle of claim 12, having an iodine value of less than 1.

18. A candle comprised substantially of hydrogenated triglycerides and hydrogenated free fatty acids, said candle having an iodine value of less than 10.

19. The candle of claim 18, having an iodine value of less than 5.

20. The candle of claim 18, having an iodine value of less than 1.